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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,677	12/27/2001	Ilan Barak	P-4028-US	7047

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EXAMINER	
DEAN, RAYMOND S	

ART UNIT	PAPER NUMBER
2684	6

DATE MAILED: 07/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/026,677	BARAK ET AL.	
	Examiner	Art Unit	
	Raymond S Dean	2684	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 December 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)

(e) BACKGROUND OF THE INVENTION.
(1) Field of the Invention.
(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(f) BRIEF SUMMARY OF THE INVENTION.
(g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(h) DETAILED DESCRIPTION OF THE INVENTION.
(i) CLAIM OR CLAIMS (commencing on a separate sheet).
(j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference character(s) mentioned in the description: Input Signal (12) in Figure 1, Output Signal (211) in Figure 6, and Outphasing Signal Generator (260) in Figure 7. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1 – 11 and 22 – 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent (6,133,788) in view of Nielsen et al. (US 6,633,199).

Regarding Claim 1, Dent teaches a method comprising: providing first and second out-phased signals (Figure 2, Figure 3, Column 6 lines 66 – 67, Column 7 lines 1 – 4, Column 7 lines 59 – 67, Column 8 lines 1 – 2, the out-phased signals are 306 and 308).

Dent does not teach shared by a phase lock loop and an automatic level control loop.

Nielsen teaches shared by a phase lock loop and an automatic level control loop (Figure 1, Column 6 lines 6 – 7, Column 6 lines 11 – 14, the signals (I', Q', and A) feed the analog output stage, said analog output stage performs operations on all said signals such that an output signal is generated thus said analog output stage shares all said signals which means that the amplitude feedback loop, which is an automatic level control loop, and the phase lock loop also share said signals as said analog output stage comprises said amplitude feedback loop and said phase lock loop).

Dent and Nielsen both teach an amplifier circuit for use in radio transmitters thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the amplitude feedback loop and phase lock loop taught in Nielsen in the amplifier circuit of Dent for the purpose of improving the phase linearity as well as the amplitude linearity of the amplifiers of Dent thus creating lower levels of spurious signals as taught by Nielsen.

Regarding Claim 2, Dent in view of Nielsen teaches all of the claimed limitations recited in Claim 1. Dent further teaches generating an output signal according to the first and second out-phased signals (Figure 3, Column 8 lines 38 - 41).

Regarding Claim 3, Dent in view of Nielsen teaches all of the claimed limitations recited in Claim 2. Nielsen further teaches controlling an instantaneous amplitude of the output signal by varying an amplitude and varying a phase difference of a signal according to an amplitude error of the output signal (Figure 1, Column 7 lines 15 – 44, Column 7 lines 66 – 67, Column 8 lines 1 – 21, the difference (Da) is the amplitude error); and varying a phase of a signal according to a phase error signal of the output signal (Column 7 lines 15 – 44, the difference (Dp) is the phase error).

Regarding Claim 4, Dent in view of Nielsen teaches all of the claimed limitations recited in Claim 3. Nielsen further teaches generating the amplitude error signal and the phase error signal according to an input signal and the output signal (Column 7 lines 15 – 44, Column 7 lines 66 – 67, Column 8 lines 1 – 21), generating a first control signal of the automatic level control loop according to the amplitude error of the output signal (Column 7 lines 66 – 66, Column 8 lines 1 – 21, the difference signal (Da) is also the

control signal); and generating a second control signal of the automatic level control loop determined, at least in part, by an adaptive function of the amplitude error signal (Figure 2, Column 9 lines 61 – 65, the gain control signal (Ga) is a second control signal that is derived from the difference signal (Da)).

Regarding Claim 5, Dent in view of Nielsen teaches all of the claimed limitations recited in Claim 4. Nielsen further teaches varying the amplitude of a signal with a first range of the amplitude error of the output signal (Column 8 lines 1 – 21); and varying the phase difference of a signal with a second range of the amplitude error of the output signal (Column 7 lines 15 – 44, Column 7 lines 66 – 67, Column 8 lines 1 – 21, the phase difference (Dp) can vary for any amplitude difference (Da) since the phase is controlled by a separate phase lock loop).

Regarding Claim 6, Dent in view of Nielsen teaches all of the claimed limitations recited in Claim 5. Nielsen further teaches transmitting the output signal at an average power level which is substantially equivalent to a targeted power level (Column 8 lines 1 – 21, Column 10 lines 27 – 29, the amplitude feedback loop maintains amplitude linearity such that a targeted power level is achieved thus the average power level will be equivalent to the desired or targeted power level).

Regarding Claim 7, Dent in view of Nielsen teaches all of the claimed limitations recited in Claim 6. Nielsen further teaches selecting the targeted power level from a first and a second power levels (Column 8 lines 1 – 21, Column 10 lines 27 – 29, the amplitude feedback loop maintains amplitude linearity thus allowing for various desired power levels to be selected).

Regarding Claim 8, Dent teaches first and second out-phased signals (Figure 2, Figure 3, Column 6 lines 66 – 67, Column 7 lines 1 – 4, Column 7 lines 59 – 67, Column 8 lines 1 – 2, the out-phased signals are 306 and 308).

Dent does not teach controlling an instantaneous amplitude of an output signal by varying phase difference and an amplitude of first and second out-phased signals according to first and second control signals; and setting a phase to the first and the second out-phased signals according to a phase of an envelope signal.

Nielsen teaches controlling an instantaneous amplitude of an output signal by varying phase difference and an amplitude of a signal according to first and second control signals (Column 7 lines 15 – 44, Column 7 lines 66 – 67, Column 8 lines 1 – 21, Dp and Da are the control signals); and setting a phase to a signal according to a phase of an envelope signal (Column 7 lines 15 – 44, the signal P has an amplitude and thus an envelope).

Dent and Nielsen both teach an amplifier circuit for use in radio transmitters thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the amplitude feedback loop and phase lock loop taught in Nielsen in the amplifier circuit of Dent for the purpose of improving the phase linearity as well as the amplitude linearity of the amplifiers of Dent thus creating lower levels of spurious signals as taught by Nielsen.

Regarding Claim 9, Dent in view of Nielsen teaches all of the claimed limitations recited in Claim 8. Nielsen further teaches generating the envelope signal according to a phase of an input signal (Column 7 lines 15 – 44, the output signal will have an

amplitude and thus an envelop); generating the first and the second control signals according to an adaptive function determined, at least in part, on an instantaneous amplitude of the input signal (Column 7 lines 15 – 44, Column 7 lines 66 – 66, Column 8 lines 1 – 21, the two control signals are Dp and Da, one of said signals Da is generated according to the amplitude), an average power level that is substantially equivalent to a targeted power level (Column 8 lines 1 – 21, Column 10 lines 27 – 29, the amplitude feedback loop maintains amplitude linearity such that the targeted power level can be achieved thus the average power level will be equivalent to the desired or targeted power level). Dent further teaches combining the first and the second out-phased signals to provide an output signal (Figure 3, Column 8 lines 38 - 41).

Regarding Claim 10, Dent in view of Nielsen teaches all of the claimed limitations recited in Claim 9. Nielsen further teaches manipulating the instantaneous amplitude of the input signal with the targeted power level, wherein the targeted power level is selected from first and second power levels (Column 8 lines 1 – 21, Column 10 lines 27 – 29, the amplitude feedback loop maintains amplitude linearity thus allowing for various desired power levels to be selected).

Regarding Claim 11, Dent in view of Nielsen teaches all of the claimed limitations recited in Claim 10. Nielsen further teaches varying the amplitude of a signal at a first range of the instantaneous amplitude (Column 8 lines 1 – 21, the range is the difference (Da)); and varying the phase difference of the signal at a second range of the instantaneous amplitude (Column 7 lines 15 – 44, Column 7 lines 66 – 67, Column 8

lines 1 – 21, the phase difference (Dp) can vary for any amplitude difference (Da) since the phase is controlled by a separate phase lock loop).

Regarding Claim 22, Dent teaches an out-phasing signal generator to generate first and second out-phased signals (Figure 3, Column 6 lines 66 – 67, Column 7 lines 1 – 4, Column 7 lines 59 – 67, Column 8 lines 1 – 2, the out-phased signal generator is 330, the out-phased signals are 306 and 308).

Dent does not teach a control signal generator to generate first and second control signals according to an adaptive function determined, at least in part, by an instantaneous amplitude of an input signal and a constant envelope signal.

Nielsen teaches a control signal generator to generate first and second control signals according to an adaptive function determined, at least in part, by an instantaneous amplitude of an input signal (Column 7 lines 15 – 44, Column 7 lines 66 – 67, Column 8 lines 1 – 21, the two control signals are Dp and Da, one of said signals Da is generated according to the amplitude) and a constant envelope signal (Column 6 lines 66 – 67, Column 7 line 1, the amplitude is constant thus there will be a constant envelope).

Dent and Nielsen both teach an amplifier circuit for use in radio transmitters thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the amplitude feedback loop, phase lock loop taught in Nielsen in the amplifier circuit of Dent for the purpose of improving the phase linearity as well as the amplitude linearity of the amplifiers of Dent thus creating lower levels of spurious signals as taught by Nielsen.

Regarding Claim 23, Dent in view of Nielsen teaches all of the claimed limitations recited in Claim 22. Nielsen further teaches a power amplifier to provide an output signal (Figure 1) and to transmit the output signal at an average power level which is substantially equivalent to a targeted power level (Column 8 lines 1 – 21, Column 10 lines 27 – 29, the amplitude feedback loop maintains amplitude linearity such that a targeted power level is achieved thus the average power level will be equivalent to the desired or targeted power level).

Regarding Claim 24, Dent in view of Nielsen teaches all of the claimed limitations recited in Claim 23. Nielsen further teaches wherein the first and the second control signals are adapted to vary amplitudes of a signal at a first range of the instantaneous amplitude (Column 8 lines 1 – 21, the range is the difference (Da)) and to vary a phase difference of a signal at a second range of the instantaneous amplitude (Column 7 lines 15 – 44, Column 7 lines 66 – 67, Column 8 lines 1 – 21, the phase difference (Dp) can vary for any amplitude difference (Da) since the phase is controlled by a separate phase lock loop).

Regarding Claim 25, Dent in view of Nielsen teaches all of the claimed limitations recited in Claim 24. Nielsen further teaches manipulating the instantaneous amplitude of the input signal with the targeted power level, wherein the targeted power level is selected from first and second power levels (Column 8 lines 1 – 21, Column 10 lines 27 – 29, the amplitude feedback loop maintains amplitude linearity thus allowing for various desired power levels to be selected).

Regarding Claim 26, Dent teaches a signal generator which is adapted to generate an envelope signal according to a phase of a baseband signal (Figure 3, Column 7 lines 59 – 67, Column 8 lines 1 – 2, signal generator is 330, I and Q are the baseband signals, the signals 306 and 308 have amplitudes and thus envelopes).

Dent does not teach a control signal generator to generate first and second control signals according to an adaptive function determined, at least in part, by an instantaneous amplitude of a baseband signal.

Nielsen teaches a control signal generator to generate first and second control signals according to an adaptive function determined, at least in part, by an instantaneous amplitude of a signal (Column 7 lines 15 – 44, Column 7 lines 66 – 67, Column 8 lines 1 – 21, the two control signals are Dp and Da, one of said signals Da is generated according to the amplitude).

Dent and Nielsen both teach an amplifier circuit for use in radio transmitters thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the amplitude feedback loop and phase lock loop taught in Nielsen in the amplifier circuit of Dent for the purpose of improving the phase linearity as well as the amplitude linearity of the amplifiers of Dent thus creating lower levels of spurious signals as taught by Nielsen.

Regarding Claim 27, Dent in view of Nielsen teaches all of the claimed limitations recited in Claim 26. Dent further teaches an out-phasing signal generator to generate the first and second out-phased signals according to the envelope signal (Figure 3, Column 7 lines 59 – 67, Column 8 lines 1 – 2, the out-phased signals

(306,308) comprise envelope signals) wherein the first and the second out-phased signals comprise a phase which is provided by the envelope signal (Figure 3, Column 7 lines 59 – 67, Column 8 lines 1 – 2, the out-phased signals (306,308) comprise envelope signals). Nielsen further teaches a variable phase difference and a variable amplitude which varies according to the first and the second control signals (Column 7 lines 15 – 44, Column 7 lines 66 – 67, Column 8 lines 1 – 21).

Regarding Claim 28, Dent in view of Nielsen teaches all of the claimed limitations recited in Claim 27. Nielsen further teaches a power amplifier which is adapted to provide an output signal at an average power level which is substantially equivalent to a targeted power level (Figure 1, Column 8 lines 1 – 21, Column 10 lines 27 – 29, the amplitude feedback loop maintains amplitude linearity such that the desired power level can be achieved thus the average power level will be equivalent to the desired or targeted power level).

Regarding Claim 29, Dent in view of Nielsen teaches all of the claimed limitations recited in Claim 28. Nielsen further teaches manipulating the instantaneous amplitude of the input signal with the targeted power level, wherein the targeted power level is selected from first and second power levels (Column 8 lines 1 – 21, Column 10 lines 27 – 29, the amplitude feedback loop maintains amplitude linearity thus allowing for various desired power levels to be selected).

6. Claims 12 – 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent (6,133,788) in view of Nielsen et al. (US 6,633,199) and in further view of Alinikula (5,786,728).

Regarding Claim 12, Dent teaches first and second out-phased signals (Figure 2, Figure 3, Column 6 lines 66 – 67, Column 7 lines 1 – 4, Column 7 lines 59 – 67, Column 8 lines 1 – 2, the out-phased signals are 306 and 308).

Dent does not teach generating first and second control signals according to an adaptive function determined, at least in part, by an instantaneous amplitude of a pre-distorted signal; and varying a phase difference and an amplitude of the first and the second out-phased signals according to the first and the second control signals.

Nielsen teaches generating first and second control signals according to an adaptive function determined, at least in part, by an instantaneous amplitude of a signal (Column 7 lines 15 – 44, Column 7 lines 66 – 67, Column 8 lines 1 – 21, the two control signals are Dp and Da, one of said signals Da is generated according to the amplitude), and varying a phase difference and an amplitude of a signal according to the first and the second control signals (Column 7 lines 15 – 44, Column 7 lines 66 – 67, Column 8 lines 1 – 21).

Dent and Nielsen both teach an amplifier circuit for use in radio transmitters thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the amplitude feedback loop and phase lock loop taught in Nielsen in the amplifier circuit of Dent for the purpose of improving the phase linearity as well as

the amplitude linearity of the amplifiers of Dent thus creating lower levels of spurious signals as taught by Nielsen.

Dent in view of Nielsen does not teach a pre-distorted signal.

Alinikula teaches a pre-distorted signal (Figure 2, Column 4 lines 16 – 17, V sub 1 is the pre-distorted signal).

Dent in view of Nielsen and Alinikula teach radio transmitters comprising amplifiers thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use pre-distortion linearizer taught in Alinikula in the radio transmitter of Dent in view of Nielsen for the purpose of improving the linearity of the amplifiers thus enabling the elimination of undesired frequency components.

Regarding Claim 13, Dent in view of Nielsen and in further view of Alinikula teaches all of the claimed limitations recited in Claim 12. Nielsen further teaches generating an envelope signal according to a phase of a signal (Figure 1, Column 7 lines 15 – 44, the output signal will have an amplitude and thus an envelope); and varying a phase of a signal according to the envelope signal (Column 7 lines 15 – 44)

Regarding Claim 14, Dent in view of Nielsen and in further view of Alinikula teaches all of the claimed limitations recited in Claim 12. Dent further teaches combining the first and the second out-phased signals to provide an output signal (Figure 3, Column 8 lines 38 - 41). Nielsen further teaches an average power level which is substantially equivalent to a targeted power level (Column 8 lines 1 – 21, Column 10 lines 27 – 29, the amplitude feedback loop maintains amplitude linearity such that a targeted power level is achieved thus the average power level will be

equivalent to the desired or targeted power level). Alinikula further teaches generating the pre-distorted signal to compensate for distortion at the output signal (Figure 2, Column 4 lines 16 – 17, V sub 1 is the pre-distorted signal).

Regarding Claim 15, Dent in view of Nielsen and in further view of Alinikula teaches all of the claimed limitations recited in Claim 14. Nielsen further teaches manipulating the instantaneous amplitude of the input signal with the targeted power level, wherein the targeted power level is selected from first and second power levels (Column 8 lines 1 – 21, Column 10 lines 27 – 29, the amplitude feedback loop maintains amplitude linearity thus allowing for various desired power levels to be selected).

7. Claims 16 – 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent (6,133,788) in view of Nielsen et al. (US 6,633,199) and in further view of Wallace et al. (6,147,653).

Regarding Claim 16, Dent teaches an out-phased signal generator and a power amplifier (Figure 3, Column 6 lines 66 – 67, Column 7 lines 1 – 4, Column 7 lines 59 – 67, Column 8 lines 1 – 2, the out-phased signal generator is 330, the amplifiers are 312 and 314).

Dent does not teach a coupler to provide a feedback signal of an output signal to a phase lock loop and an automatic level control loop, shared by the phase lock loop and the automatic level control loop, and a dipole antenna to transmit the output signal according to a targeted power level.

Nielsen teaches a coupler to provide a feedback signal of an output signal to a phase lock loop and an automatic level control loop (Figure 1, Column 7 line 15, Column 7 line 66, the output signals are coupled to the phase lock loop and the amplitude feedback loop through the feedback loops thus there is an inherent coupler to allow said coupling), shared by the phase lock loop and the automatic level control loop (Figure 1, Column 6 lines 6 – 7, Column 6 lines 11 – 14, the signals (I', Q', and A) feed the analog output stage, said analog output stage performs operations on all said signals such that an output signal is generated thus said analog output stage shares all said signals which means that the amplitude feedback loop, which is an automatic level control loop, and the phase lock loop also share said signals as said analog output stage comprises said amplitude feedback loop and said phase lock loop), and transmitting the output signal according to a targeted power level (Column 8 lines 1 – 21, Column 10 lines 27 – 29, the amplitude feedback loop maintains amplitude linearity such that a targeted power level is achieved).

Dent and Nielsen both teach an amplifier circuit for use in radio transmitters thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the amplitude feedback loop, phase lock loop, and coupler taught in Nielsen in the amplifier circuit of Dent for the purpose of improving the phase linearity as well as the amplitude linearity of the amplifiers of Dent thus creating lower levels of spurious signals as taught by Nielsen.

Dent in view of Nielsen does not teach a dipole antenna.

Wallace teaches a dipole antenna (Figure 6, Column 4 line 3).

Dent (Column 1 lines 29 – 34, the amplifier circuit can be used in radiotelephones or base stations) in view of Nielsen and Wallace teach a radiotelephone thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the dipole antenna taught in Wallace on the radiotelephone of Dent in view of Nielsen for the purpose of creating a symmetric radiation pattern thus allowing said radiotelephone to receive and transmit signals from and in all directions.

Regarding Claim 17, Dent in view of Nielsen and in further view of Wallace teaches all of the claimed limitations recited in Claim 16. Nielsen further teaches a phase error detector which is adapted to provide a phase error signal according to an input signal and the output signal; and a signal generator to generate a envelope signal according to the phase error signal (Figure 1, Column 7 lines 15 – 44, the difference (Dp) is the phase error signal).

Regarding Claim 18, Dent in view of Nielsen and in further view of Wallace teaches all of the claimed limitations recited in Claim 17. Nielsen further teaches an amplitude error detector to provide an amplitude error signal according to the input signal and the output signal (Figure 1, Column 7 lines 66 – 67, Column 8 lines 1 – 21, the amplitude error signal is (Da)); and a control signal generator to generate first and second control signals according to the amplitude error signal, wherein the first control signal is determined, at least in part, by the amplitude error signal (Column 7 lines 66 – 67, Column 8 lines 1 – 21, the signal Da is also the control signal) and the second control signal is determined, at least in part, by an adaptive function of the amplitude

error signal (Figure 2, Column 9 lines 61 – 65, the gain control signal (Ga) is a second control signal that is derived from the difference signal (Da)).

Regarding Claim 19, Dent in view of Nielsen and in further view of Wallace teaches all of the claimed limitations recited in Claim 18. Nielsen further teaches wherein the second control signals are adapted to vary amplitudes of a signal at a first range of the amplitude error signal (Column 8 lines 1 – 21, Column 9 lines 61 – 65, the difference Da is the range, the control signal Ga is directly proportional to the difference Da thus Ga will be adapted to vary the amplitudes at a difference Da) and to vary a phase difference of a signal at a second range of the amplitude error signal (Column 7 lines 15 – 44, Column 7 lines 66 – 67, Column 8 lines 1 – 21, Column 9 lines 61 – 65, the phase difference (Dp) can vary for any amplitude difference (Da) since the phase is controlled by a separate phase lock loop, Ga is directly proportional to Da thus Ga can be adapted over various amplitude differences).

Regarding Claim 20, Dent in view of Nielsen and in further view of Wallace teaches all of the claimed limitations recited in Claim 16. Dent further teaches first and second power amplifiers which are adapted to amplify the first and the second out-phased signals (Figure 3, the out-phased signals are 306 and 308, the amplifiers are 312 and 314); and a combiner which is adapted to combine the first and the second amplified out-phased signals (Figure 3, Column 8 lines 38 – 41).

Regarding Claim 21, Dent in view of Nielsen and in further view of Wallace teaches all of the claimed limitations recited in Claim 20. Nielsen further teaches wherein the targeted power level is to be selected from first and second power levels

(Column 8 lines 1 – 21, Column 10 lines 27 – 29, the amplitude feedback loop maintains amplitude linearity thus allowing for various desired power levels to be selected).

Conclusion

8. Any inquiry concerning this communication should be directed to Raymond S. Dean at telephone number (703) 305-8998.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung, can be reached at (703) 308-7745. Any response to this action should be mailed to:

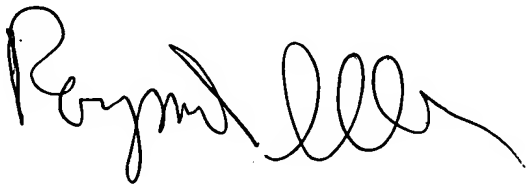
Commissioner of Patents and Trademarks

Washington, D.C. 20231

Or faxed to:

(703) 872-9314 (for Technology center 2600 only)

Hand –delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist). Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



NAY MAUNG
SUPERVISORY PATENT EXAMINER